Machine Structure used in Cyclic Graph
Evolution
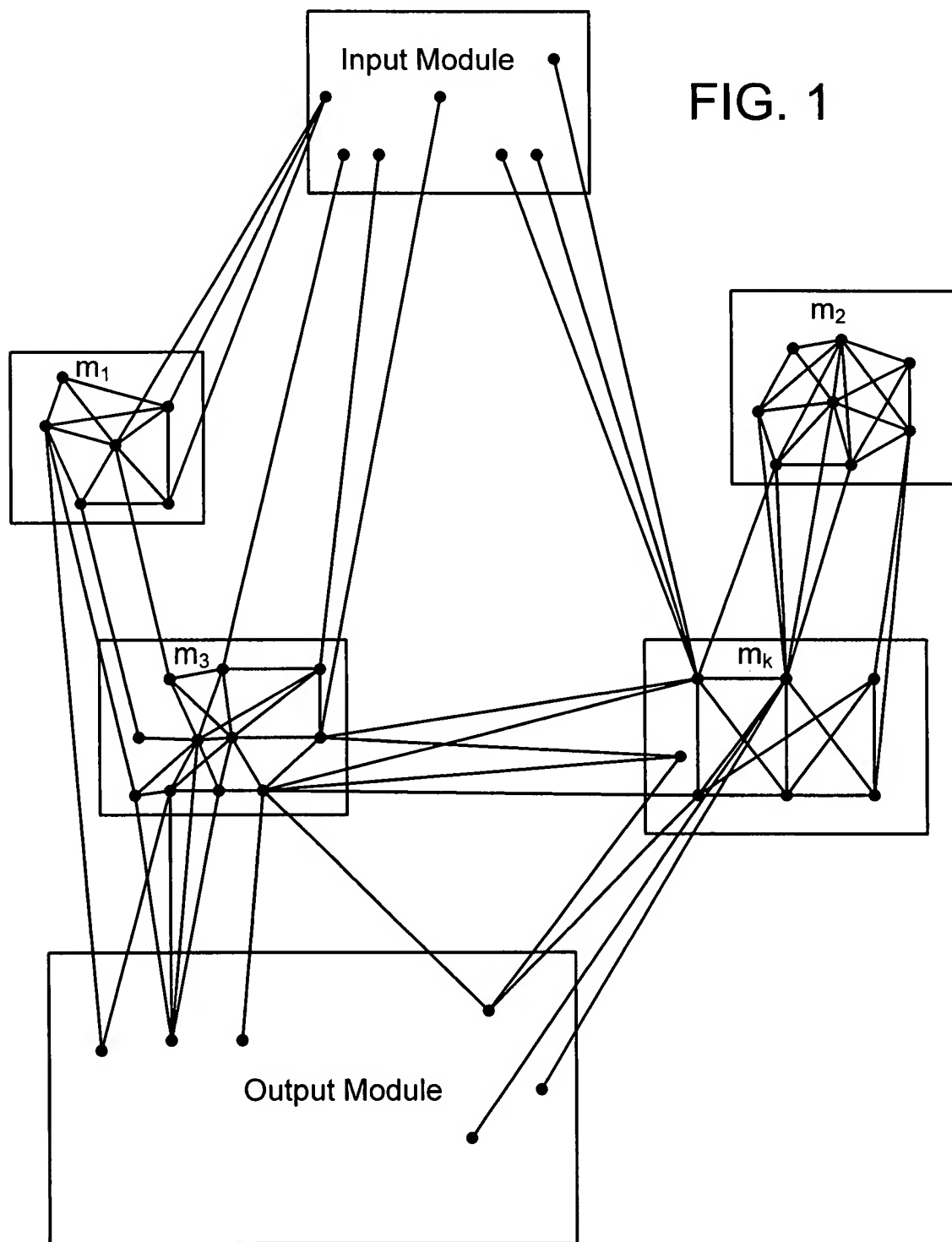
FIG. 1

Internal Modules are labeled: m_1, m_2, m_3,...
m_k

FIG. 2

CGE Crossover

Before Crosover

Machine A

Input Module

m_1 m_2 m_3

Output Module

Machine B

Input Module

m_1' m_2'

Output Module

After Crosover

Machine A

Input Module

m_2'

m_1

Output Module

Machine B

Input Module

m_1' m_2 m_3

Output Module
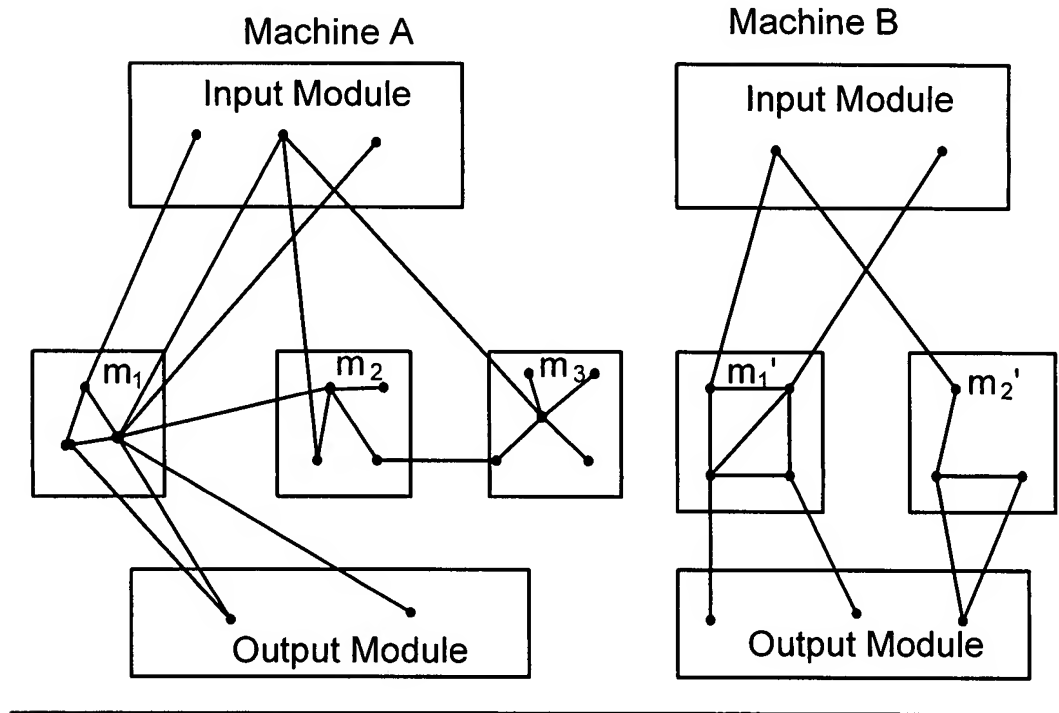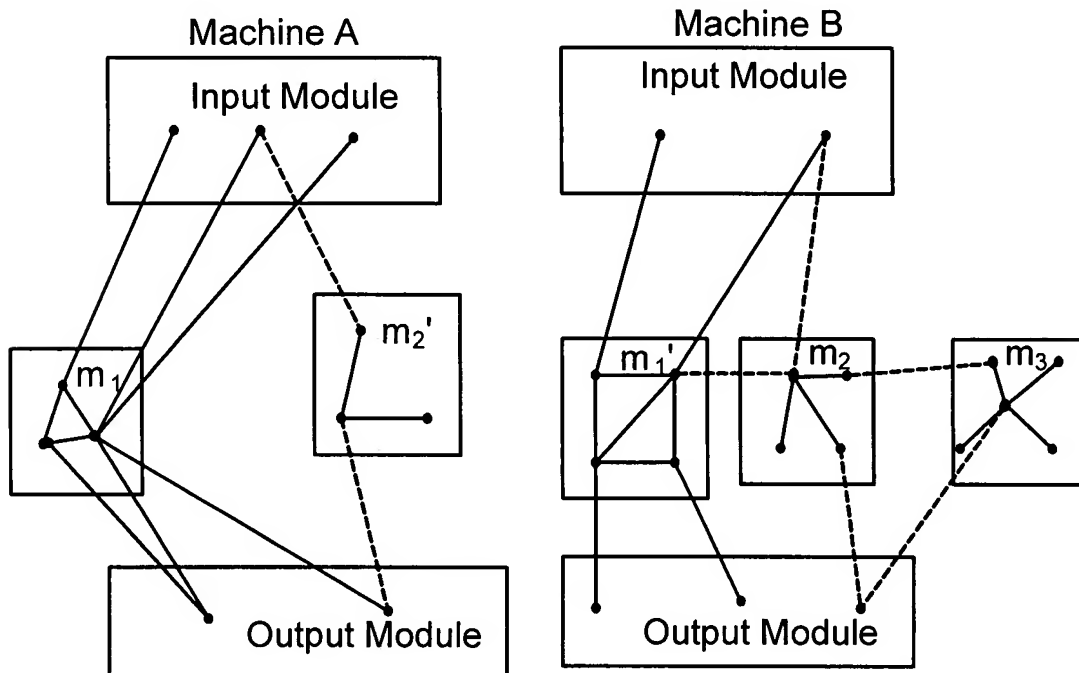
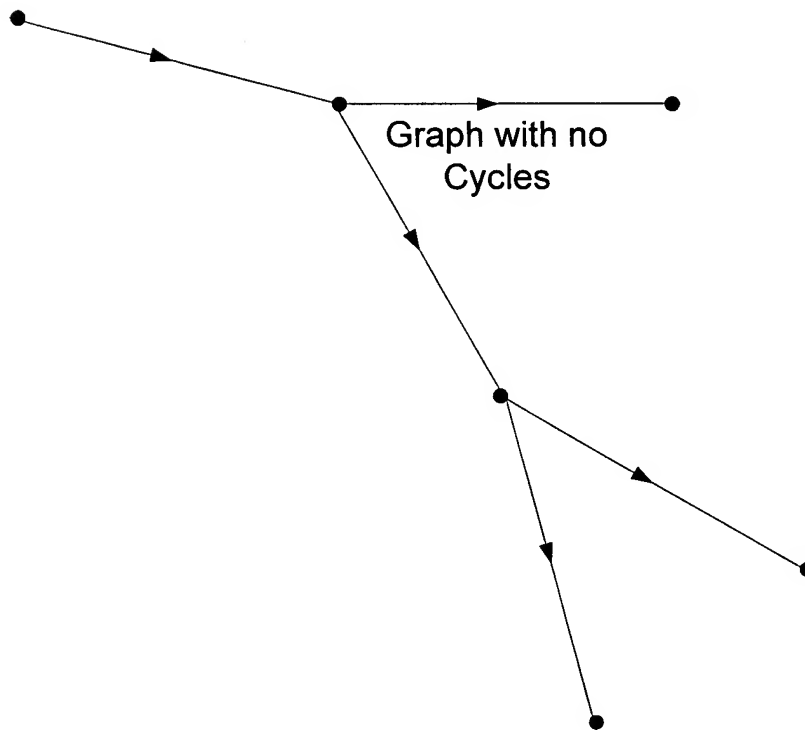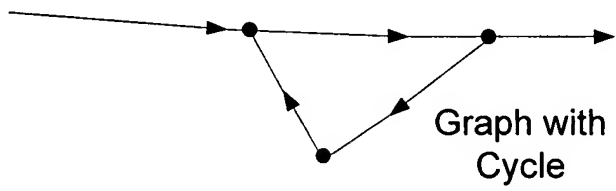----------------- New External Connections

FIG. 3

Graph with
Cycle

Graph with no
Cycles

FIG. 4

Error Tolerance in Effectors